



MICHIGAN DEPARTMENT OF
ENVIRONMENT, GREAT LAKES, AND ENERGY

Agriculture Operations – Bio-Digestors

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EGLE-MDARD

- 2012 Memorandum of Understanding between then MDEQ and MDARD
- Process of Referring Complaints to EGLE
- General Accepted Agricultural and Management Practices
- Right to Farm Protection
- Natural Resources and Environmental Protection Act
- EGLE/MDARD workgroup

AQD and Agriculture

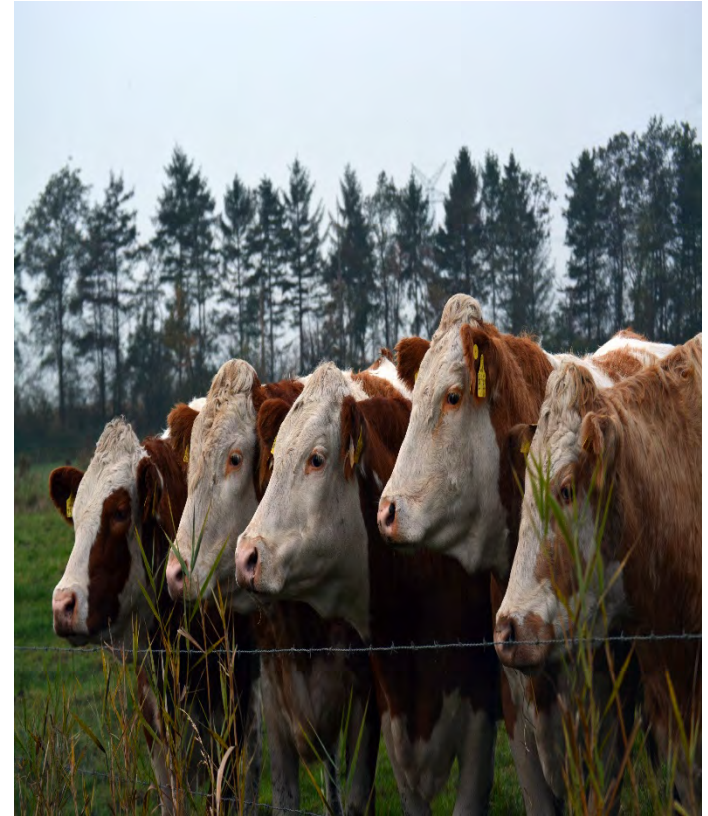
- EGLE staff have authority to conduct inspections and complaint investigations at Agricultural Operations
- AQD deals with such issues as nuisance odors, fugitive dust, and air permitting requirements
- Air permits have been issued to Agriculture Operations for such emission units as engines, product processing equipment, and bio-digestors

California Legislation

- In 2002, California passed legislation (Senate Bill 1078) to create a Renewable Portfolio Standard (RPS) – 20% of electricity retail sales must be served by renewable sources by 2017
- The program was accelerated and now requires 60% of energy sales to be renewable by 2030
- Retail sellers utilize a mix of RPS sales including wind, solar PV, solar thermal, hydroelectricity, geothermal, and bioenergy
- Other states such as Colorado and Oregon have similar mandates

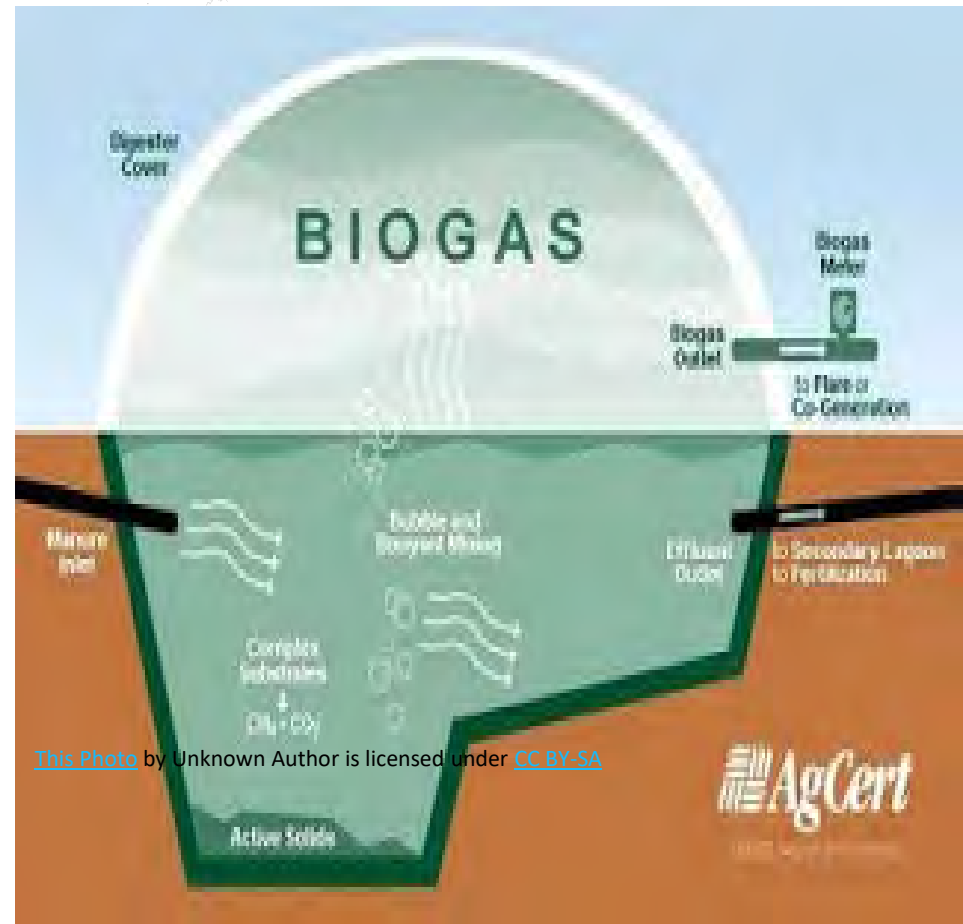
Michigan Agriculture

- Michigan has over 270 Concentrated Animal Feeding Operations
- A large CAFO can have over 1000 cows
- More and more of these CAFOs are realizing they have an untapped resource
- Manure = Money



Bio-Digestors

- Fueled by organic waste
- Micro-organisms break down organic materials and produce biogases
- Also produces nutrient rich digestates



Biogas usage



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Power engines

Fuel boilers and heaters

Run alternative-fuel cars

Natural gas supply

Bio-Digester benefits

- Burning methane reduces GHG potency
- Renewable energy source
- Reduces waste streams
- Reduces odor from manure
- Reduces potential for surface water contamination
- Creates digestates to be used as fertilizer



Environmental Regulations

- Air permits required
- Potential nuisance issues such as odors
- Water and Materials Management requirements



Air Quality Requirements

- Air Quality permitting
- Emission units may include - gas cleaning and upgrading units, thermal oxidizers and flares
- May also have emergency generators
- Stack testing requirements

EMISSION UNIT SPECIAL CONDITIONS

EMISSION UNIT SUMMARY TABLE

The descriptions provided below are for informational purposes and do not constitute enforceable conditions.

Emission Unit ID	Emission Unit Description (Including Process Equipment & Control Device(s))	Flexible Group ID
EUGCU	Gas Cleaning and upgrading Unit to upgrade the raw anaerobic digester gas for better energy output. Controlled with a 245 scfm Thermal Oxidizer	FGFLARE
EUBOILER	A 10 MMBtu/hr natural gas-fired boiler for heating the digester	NA
EUDIGESTER	A 6.6 Million Gallon Anaerobic Digester	FGFLARE
EUFLARE	A 600 scfm Flare that burns off-spec gas or excess digester gas	FGFLARE

Changes to the equipment described in this table are subject to the requirements of R 336.1201, except as allowed by R 336.1278 to R 336.1291.

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